

CLAIMS

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1. A microchip laser arrangement, comprising
a first chip of active material operative to emit
5 radiation in the near infrared spectral region,
a second chip of optically bleachable material,
which can be bleached by optical radiation in the near
infrared spectral region,
a pump diode laser operative optically to excite
10 said active material, and
a first and a second mirror enclosing said first
chip and second chip, in order to form a resonant laser
cavity,
wherein said optically bleachable material comprises
15 a cobalt-doped crystal of spinel type.
2. An arrangement as claimed in claim 1, wherein the
active material comprises erbium-doped glass, operative
to emit radiation at essentially $1.54 \mu\text{m}$ when optically
20 pumped.
3. An arrangement as claimed in claim 1, wherein the
length of the chip of active material, in the propagation
direction of the laser light, is smaller than about 5 mm,
25 preferably smaller than 1 mm.
4. An arrangement as claimed in claim 1, wherein the
length of the chip of optically bleachable material, in
the propagation direction of the laser light, is smaller
30 than about 5 mm, preferably smaller than 1 mm.
5. An arrangement as claimed in claim 1, wherein the
laser diode is arranged for longitudinal pumping of light
into the active material.

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A2

6. An arrangement as claimed in claim 5, wherein the laser diode emits light in a wavelength range between 940 nm and about 1000 nm.
- 5 7. An arrangement as claimed in claim 6, wherein the laser diode is a InGaAs diode emitting light at about 970 nm.
8. An arrangement as claimed in claim 5, wherein the
10 chip of optically bleachable material is positioned closer to the diode laser than the chip of active material, in order for light emitted by the diode to pass through the bleachable material before entering the active material.
- 15 9. An arrangement as claimed in claim 1, further comprising at least one lens for focusing the light from the diode.
- 20 10. An arrangement as claimed in claim 1, further comprising an optical fiber for guiding light from the diode to the active material.
- 25 11. An arrangement as claimed in claim 1, wherein the chip of active material and the chip of optically bleachable material are bonded together to form a monolithic body.
- 30 12. An arrangement as claimed in claim 11, wherein mirrors in the form of dielectric stacks are provided upon the end surfaces of the monolithic body, in order to form a resonant laser cavity enclosing the active material and the optically bleachable material.
- 35 13. An arrangement as claimed in claim 1, wherein the optically bleachable material is comprised of a cobalt-

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doped crystal selected among MgAl_2O_4 , ZnAl_2O_4 , ZnGa_2O_4 and LiGa_5O_8 .

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